

Infrastructure for Training and Partnerships - California Water and Coastal Ocean Resources

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The purpose of this project was to advance the existing ICESS/Bren School computing infrastructure to allow scientists, students, and research trainees the opportunity to interact with environmental data and simulations in near-real time. Improvements made with the funding from this project have helped to strengthen the research efforts within both units, fostered graduate research training, and helped fortify partnerships with government and industry. With this funding, we were able to expand our computational environment in which computer resources, software, and data sets are shared by ICESS/Bren School faculty researchers in all areas of Earth system science.

All of the graduate and undergraduate students associated with the Donald Bren School of Environmental Science and Management and the Institute for Computational Earth System Science have benefited from the infrastructure upgrades accomplished by this project. Additionally, the upgrades fostered a significant number of research projects (attached is a list of the projects that benefited from the upgrades).

As originally proposed, funding for this project provided the following infrastructure upgrades: i) a modern file management system capable of interoperating UNIX and NT file systems that can scale to 6.7 TB, ii) a Qualstar 40-slot tape library with two AIT tape drives and Legato Networker backup/archive software, iii) previously unavailable import/export capability for data sets on Zip, Jaz, DAT, 8mm, CD, and DLT media in addition to a 622Mb/s Internet 2 connection, iv) network switches capable of 100 Mbps to 128 desktop workstations, v) Portable Batch System (PBS) computational task scheduler, and vi) two Compaq/Digital Alpha XP1000 compute servers each with 1.5GB of RAM along with an SGI Origin 2000 (purchased partially using funds from this project along with funding from various other sources) to be used for very large computations, as required for simulation of mesoscale meteorology or climate.

ICESSE/Bren School research projects benefiting from Centers of Excellence Grant NASA NAG5-6478

Vladimir Aizen, Department of Energy, DE AP7-99ID00423, Glaciological and Meteorological Monitoring of High Altitudes Firn Fields

Vladimir Aizen, Department of Energy, DE-AF07-98ID00203, Glaciological and Meteorological Monitoring at High Altitudes Firn Fields

Vladimir Aizen, US Geological Survey, 9IDSA9107, Summer 1999 Field Trip to Maintain and Reload Automatic Met-Station

Doug Alsdorf and John Melack, NASA, NAG5-9055, Applications and Validation of the SRTM DEM In the Amazon

Frank W. Davis, The Nature Conservancy, WHTF-CRB-UCSB-01, 5/15/95-6/30/99 Bioenvironmental Analysis for the Columbia River Basin Project

Frank W. Davis, National Park Service, 1443CA8540-98-002, Modeling the Potential Distribution of Rare Plant Species of the Santa Monica Mountains National Recreation Area

Frank W. Davis, Santa Barbara County 8500648, Oak Woodland Inventory and Monitoring Program

Frank W. Davis, US Department of the Interior - US Geological Survey, 1445-C109-95-0454, Vulnerability of Coastal Sage Scrub to Patch Dynamics and Exotic Invasions

Frank W. Davis, University of Idaho, 8950539, Gap Analysis of Biodiversity in California

Frank W. Davis, University of Colorado at Boulder, BS0055280, Multi-scaled Ecological Assessment Method: Prototype Development within the Interior Columbia Basin

Frank W. Davis, UC Office of the President, UCSB08981123, Conservation Planning and Ecosystems Management in the Sierra Nevada

Frank W. Davis, University of Idaho, P0005278, Predicting Vulnerability of Regional Biota: Extending Gap Analysis to Include Land Use, Spatial Context, and Biotic Responses

Frank W. Davis, Sandy Andelman, David M. Stoms, The Nature Conservancy 08981493, Developing An Analytical Toolbox to Select & Design a Network of Conservation Sites for Ecoregional Conservation

Frank W. Davis, Michael Goodchild, US Environmental Protection Agency, CR 823589-01-0, Acquisition and Evaluation of Data Sets for Comparative Assessment of Risk to Biodiversity

Frank W. Davis, John M. Melack, Jet Propulsion Laboratory, JPL 958468, Biomass Modeling of the Ponderosa Pine Forests of Western North America with SIR-C x-SAR for Ecosystem Modeling

Tommy D. Dickey, Harvard University, UCSB 08970862, A Sampling and Observational Component of the Proposal: Development of a National Littoral Ocean Observing and Predictive System: Field Estimation Via Interdisciplinary Data Assimilation

Tommy D. Dickey, National Aeronautics and Space Administration, NASA NAGW-5222, Optical Measurements from Moorings in Support of SeaWiFS

Tommy D. Dickey, National Aeronautics and Space Administration, NASA NAS5-97127, High Frequency, Long Time Series Measurements from the Bermuda Testbed Mooring in Support of SIMBIOS

Tommy D. Dickey, National Science Foundation, NSF OCE-9627281, A Testbed Mooring Program for Interdisciplinary Measurements

Tommy D. Dickey, National Science Foundation, NSF OCE-97304741, The Bermuda Testbed Mooring (BTM) Project

Tommy D. Dickey, US Department of the Navy, N00014-96-1-0505, High Resolution Time Series Observations of Bio-Optical and Physical Variability in the Arabian Sea

Tommy D. Dickey, US Department of the Navy, N00014-96-1-0669, Moored Time Series Measurements of the Vertical Structure of Optical Properties in the Coastal Ocean

Tommy D. Dickey, US Department of the Navy, N00014-98-1-0508, AASERT: Moored Time Series Measurements of the Vertical Structure of Optical Properties in the Coastal Ocean

Tommy D. Dickey, University of Southern California, UCSB 08960369, AASERT: Moored Time Series Measurements of the Vertical Structure of Optical Properties in the Coastal Ocean

Jeffrey C. Dozier, Jet Propulsion Laboratory, JPL 958473, SIR-C Investigations of Snow Properties in Alpine Terrain

Jeffrey C. Dozier, Jet Propulsion Laboratory, 960930, Monitoring Snow and Ice Properties in the Alpine Regions

Jeffrey Dozier, United Nations Environment Prog, 9-29-11012, Planning and Management of Lakes and Reservoirs to Address Eutrophication

Jeffrey C. Dozier, John M. Melack, National Aeronautics and Space Administration, NAGW-5185, Hydrology, Hydrochemical Modeling, and Remote Sensing in Seasonally Snow Covered Alpine Drainage Basins

Jeffrey C. Dozier, John M. Melack, National Aeronautics and Space Administration, NAG5-4814, Hydrology, Hydrochemical Modeling, and Remote Sensing in Seasonally Snow Covered Alpine Drainage Basins

Thomas Dunne, National Aeronautics and Space Administration, NASA NAGW-5233, The EOS Amazon Project

Thomas Dunne, National Science Foundation, EAR-9628737, Distribution and Evolution of Geomorphic Process Zones in Large Mountain Ranges

Thomas Dunne, National Aeronautics and Space Administration NAG5-8396, Mesoscale Effects of Climate and Land-Cover Change on River-Basin Hydrology in Amazonia

Thomas Dunne, National Aeronautics and Space Administration, NASA NGT-30357, Sediment Evacuation from the North Central Andes and the Effects of Global Change on Mountain Range Erosion

Thomas Dunne, National Aeronautics and Space Administration, NASA NAG5-6120, The EOS Amazon Project

Thomas Dunne, National Aeronautics and Space Administration, NASA NGT-30357, Fellowship: Sediment Evacuation from the North Central Andes and the Effects of Global Change on Mountain Range Erosion

Thomas Dunne, National Science Foundation DEB-9809802, Collaborative Research on Biogeochemical Transfers Among Terrestrial and Aquatic Biospheres and the Atmosphere in Forests and Pastures of Eastern Amazonia

Thomas Dunne, US National Committee for Scientific Hydrology, 1434-CR-96-SA-01283, Publication of LBA Hydrological Sciences Workshop Document

Thomas Dunne, UC Los Alamos National Laboratory, 9931, Predicting the Transport and Fate of Contaminated Sediments, Los Alamos, New Mexico

Linda Fernandez, National Science Foundation, NSF SES-9818753, International Trade and Transboundary Pollution

James Frew, NASA, NCC5-302, The Earth System Science Workbench: A Scalable Infrastructure for ESIP's

James Frew, Lawrence Berkeley National Laboratory, 6494539, Satellite Climatology

Catherine H. Gautier, Jet Propulsion Laboratory, JPL 960928, The Roll of Air-Sea Exchange and Ocean Circulation in Climate Variability: Surface Radiation Fluxes (Continuation of JPL 959177)

Catherine H. Gautier, National Aeronautics and Space Administration, NASA NAS5-31374, Atmospheric Infrared Sounder AIRS: Calibration and Global Surface Solar Irradiance Computations

Catherine H. Gautier, National Aeronautics and Space Administration, NASA NAG5-4963, UCSB Earth System Science Undergraduate Summer Research Program

Catherine H. Gautier, National Aeronautics and Space Administration, NASA NAG5-4629, Parameterization of Cloud 3-D Effects on Surface Shortwave Radiation Budget Estimated from Satellite Measurements

Catherine H. Gautier, National Science Foundation, NSF OPP93-17120, Surface UV Irradiance and PAR Variability Over Antarctica

Catherine H. Gautier, National Science Foundation, NSF ATM93-19483, Relationship Between Clouds, SST and Surface Fluxes on Seasonal and Interannual Time Scales Over the Western Pacific

Catherine H. Gautier, US Department of Energy DOE 90ER61062, Effect of Cloudiness Heterogeneity on the Radiative Budget at the Top of the Atmosphere and at the Surface: Modeling, Verification, and Analysis

Catherine H. Gautier, uS Department of Energy, DOE 95ER61986, Clouds and Satellite Instrument Calibration from UAVs

Patricia A. Holden, National Science Foundation DEB-980546, POWRE: Microscale Mechanisms in Unsaturated Biofilm Substrate Availability: A Molecular Reporter System Approach

Patricia A. Holden, UC Toxic Substances Research and Teaching Program, UCSB08980770, A Molecular, Community-Based Approach to Determine the Presence and Origin of Pathogenic Microorganisms in Littoral Regions

Patricia Holden, National Science Foundation, BES-997772, Acquisition of an Environmental Scanning Electron Microscope System

Patricia Holden, UCSB Committee on Research, A Molecular, Community-based Approach to Determine the Presence and Origin

Patricia A. Holden, Arturo A. Keller, UC Water Resources Center W-904, A Microscale Approach to Simulating Seasonal Bioavailability Constraints on Intrinsic Biodegradation

Patricia A. Holden, Arturo A. Keller, US Environmental Protection Agency R827133-01, Understanding Seasonal Variation of Bioavailability of Residual NAPL in the Vadose Zone

Charles Jones, National Science Foundation, NSF ATM-9712855, The Nature and Predictability of the Madden and Julian Oscillation in the Coupled Ocean-Atmosphere System

Charles Jones, Jet Propulsion (NASA) 961593, Moisture Budget Variations during Episodes of Intense Convection and Westerly Wind

Charles Jones, UC Water Resources W-905, Assessment of Intraseasonal Variations in California Rainfall and the role of the Madden and Julian Oscillation

Arturo Keller, EPRI, W06085-02, Watershed Analysis Risk Management Framework

Arturo Keller, CAL-EPA, 98-T1685, ISO 14000 Research Project

Arturo Keller, Environmental Protection Agency, EPS R826268, Pore Scale Determination of the Rate of NAPL Dissolution or Volatilization

Charles D. Kolstad, US Department of Energy, DE-FG03-96ER62277, climate-Variability, Stochasticity, and Learning in Integrated Assessment Models

Charles D. Kolstad, US Department of Agriculture, 43-3AEL-6-80050, Testing Models of Learning and Adaptation for Agriculture in Responding to Climate and other Shocks

Sally MacIntyre, University of Michigan, DEB-9318085, Lake Victoria: Structure and Function of a Tropical Ecosystem

Bruce E. Mahall, Frank W. Davis, County of Santa Barbara, BC94368, Santa Barbara County Oak Restoration Project

Natalie Mahowald, National Science Foundation, ATM-9902987, Isentropic Chemical Transport Modeling

Natalie Mahowald, NASA, NAGS-8680, Atmospheric Mineral Dust and Chlorophyll Blooms

Natalie Mahowald and David A. Siegel, National Science Foundation, OCE-9981398, Collaborative Research: Oceanic N₂ Fixation and Global Climate

John M. Melack, Jet Propulsion Laboratory, JPL 958469, Determining the Extent of Inundation on Subtropical and Tropical River Floodplains Beneath Vegetation of Varying Types and Densities (Flow-through funds from NASA)

John M. Melack, National Aeronautics and Space Administration, NASA NAGW-4352, Floodplain and River Dynamics in Three Large South American Rivers: An Integration of Remote Sensing, Regional Climatic Data and Modeling

John M. Melack, National Aeronautics and Space Administration, NASA NAGW-5115, JERS Amazon Multi-Season Mapping Study (JAMMS)

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John M. Melack, Leal A.K. Mertes, National Aeronautics and Space Administration, NASA NCC5-281, Multi-scale Analysis of Inundation with Microwave and Optical Remote Sensing in the Amazon Basin: Applications to Biogeochemical Measurements and Modeling

Leal A. Mertes, Dartmouth College, 5-36090 (flow-through from NASA EOS), River Flooding in Response to Global Environmental Change: A Multi-Sensor Approach

Leal Mertes, UC California Space Institute, NGT5-40007, National Space Grant College and Fellowship Program

Leal A.K. Mertes, John Warrick, National Aeronautics and Space Administration NAGT5-30173, Fellowship: Mass Balance of Sediment Transport across Coastal Margin Filters at the Base of the Transverse Ranges, CA

Karen W. Patterson, Raymond C. Smith, US Environmental Protection Agency, U-914954-01-0, Graduate Education Fellowship

Paul Ricchiazzi, Catherine Gautier, National Science Foundation OPP-9725403, Surface UV Irradiance and PAR Variability over Antarctica

Dar A. Roberts, Jeffrey C. Dozier, UC Los Alamos National Laboratory, STB/UC:97-50, Detection and Mapping with Imaging Spectrometry. A Proposal to LANL Science and Tech Base (STB) Program for UCDRD Funding to plant the seed for a strategic collaboration between LANL and UCSB.

Dar A. Roberts, Charles Jones, Joel Michaelsen, Catherine H. Gautier, Richard L. Church, California State University - Dominguez Hills (NASA Flow-through) UCSB19990018, Center for Managing Fire Hazards at the Urban-Wildlands Interface

Jiancheng Shi, National Aeronautics and Space Administration, NAG5-6465, Investigation of Snow Properties Using MODIS and Aster Data

David A. Siegel, National Aeronautics and Space Administration, NASA NAGW-3145, Inherent Optical Property Inversion of SeaWiFS Ocean Color Imagery

David A. Siegel, National Aeronautics and Space Administration, NASA S-97648-Z, Emergency Funding-SIMBIOS start-up RFQ #970-31647-0000/902

David A. Siegel, National Aeronautics and Space Administration, NASA NAS5-97125, The Bermuda BioOptics Program (BBOP)

David A. Siegel, National Aeronautics and Space Administration, NASA NAG5-6288, Development and Application of the Next Generation of Ocean Color Models for the Understanding of Marine Processes on Regional and Global Scales

David A. Siegel, National Aeronautics and Space Administration, NASA NAG5-6478, Infrastructure for Training and Partnerships - California Water and Coastal Ocean Resources

David A. Siegel, US Department of the Navy, N00014-96-1-0007, Evaluation of In-Situ Absorption/Beam Attenuation Meters

David A. Siegel, US Department of the Navy, N00014-97-1-0028, MSX Ocean Color Science: Bermuda and Santa Barbara Channel

David A. Siegel, University of Southern California, USC 024190, SeaSpace TeraScan ground station

David A. Siegel, National Aeronautics and Space Administration NAS5-99083, Spectral Data Assimilation for Merging Satellite Ocean Color Imagery

David A. Siegel, Raymond C. Smith, Libe Washburn, Tommy D. Dickey, US Department of the Navy, N00014-96-1-1068, Oceanographic Field Equipment for UCSB Scientists

David A. Siegel, Libe Washburn, Raymond C. Smith, Mark Brzezinski, Leal Mertes, National Oceanic and Atmospheric Administration, NA66GPO340, Ocean Color Assessment of Plumes and Blooms in the Santa Barbara Channel and its Surrounding Waters

David A. Siegel, Libe Washburn, National Science Foundation, NSF OCE-9525856, Solar Radiation Penetration and Upper Ocean Heating in TOGA/COARE

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Raymond C. Smith, National Aeronautics and Space Administration, NASA NAGW 290-3, Ship and Satellite in the California Bight

Raymond C. Smith, National Aeronautics and Space Administration, NAG5-4126, Spatial and Temporal Variability in Sea Ice Coverage West of the Antarctic Peninsula

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Raymond C. Smith, Mark Brzezinski, David A. Siegel, Libe Washburn, Leal Mertes, US Department of the Navy, N00014-96-1-0309, Coastal Ocean Optical Properties in the Santa Barbara Basin

Zhengming Wan, National Aeronautics and Space Administration, NASA NAS5-31370, Land Surface Temperature Measurements from EOS MODIS Data

Libe Washburn, University of Southern California, EP-3, Bio-Optical Characterization of Particle Fields from Storm Water Runoff into Santa Monica Bay

Libe Washburn, University of Southern California, 012135, Bio-Optical-Characterization of Particle Fields from Storm Water Runoff into Santa Monica Bay

Libe Washburn, University of Southern California, USC 025439, Dispersion and Mixing of Storm Water Runoff in Santa Monica Bay: Application of Spectral Bio-Optical Techniques for Observing Containment Distributions

Libe Washburn, Jordan F. Clark, UC Energy Institute, UCSB08980660, Measurement of Hydrocarbon Fluxes due to Natural Seepage in the Northern Santa Barbara Channel